

TIMMINS

***water pollution
control plant***

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ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET, TORONTO 5

OFFICE OF THE GENERAL MANAGER

Members of the Timmins Local Advisory Committee,
Timmins, Ontario.

Gentlemen:

We are happy to present you with the 1967 Operating Summary for the
Timmins Water Pollution Control Plant, OWRC Project No. 2-0071-60.

Your co-operation with our staff throughout the year has been appreciated.
Only with such co-operation can the war against water pollution be waged
effectively.

Yours very truly,

A handwritten signature in dark ink, appearing to read "D. S. Caverly", is written over the typed name.

D. S. Caverly,
General Manager.

LIBRARY COPY

JUN 27 1968

ONTARIO WATER
RESOURCES COMMISSION



ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET

TORONTO 5

TELEPHONE 365-

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J. H. H. ROOT, M.P.P.
VICE-CHAIRMAN

D. S. CAVERLY
GENERAL MANAGER

W. S. MACDONNELL
COMMISSION SECRETARY

General Manager,
Ontario Water Resources Commission.

Dear Sir:

I am pleased to submit to you the 1967 Operating Summary for the Timmins Water Pollution Control Plant, OWRC Project No. 2-0071-60.

The summary reviews progress during the year, outlines operating problems encountered and summarizes in graphs, charts and tables all significant flow and cost data.

Yours very truly,

A handwritten signature in cursive script, reading "D. A. McTavish".

D. A. McTavish, P. Eng.,
Director,
Division of Plant Operations.

FOREWORD

● This operating summary has been prepared in order to acquaint readers with the management of the project during 1967. The efficiency of the plant's operation is reflected in a general review. Significant financial details are recorded, and technical performance is illustrated by graphs and charts.

The summary should answer two salient questions. Are the project's facilities adequate at this time? And can the project meet future requirements?

The Regional Operations Engineer is primarily responsible for the preparation of the report, and will be pleased to answer any questions regarding it.

Most of the material for the graphs and charts was compiled by the statistics section of the Division of Plant Operations, with the final versions of the graphs being drawn by the draughting section of the Division of Sanitary Engineering. Cost data were provided by the Division of Finance.

It will be evident from the report that all of these groups co-operated with substantial success.

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TIMMINS

water pollution control plant

operated for

THE TOWN OF TIMMINS

by the

ONTARIO WATER RESOURCES COMMISSION

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Assistant Director: C. W. Perry
Regional Supervisor: P. J. Osmond
Operations Engineer: R. Kauppinen

801 Bay Street Toronto 5

'67 REVIEW

The total operating cost for 1967 was \$59,857.94, a substantial increase of 89.3 percent from the 1966 operating cost of \$31,647.82. The most significant increase occurred in the sundry costs, which included \$18,745.96 for sludge haulage. In previous years the Town of Timmins provided sludge haulage service free of charge. However, in 1967 a private contract was let for sludge haulage.

A total of 1144.8 million gallons was treated during 1967. An increase of 7.6 percent from the 1131.0 million gallons treated in 1966. The average daily flow increased slightly from 3.10 mgd in 1966 to 3.14 mgd in 1967. BOD and suspended solids removal efficiencies averaged 60.9 and 59.7 percent respectively.

During 1967, 5,855,325 gallons of raw sludge were pumped to the digester and 2,002,555 gallons of digested sludge were hauled from the digester by tank truck. A total of 2,095,450 cubic feet of gas was produced in 1967.

During the period from May 15 to October 31, 28,270 pounds of chlorine were used to disinfect the final effluent.

Generally the plant operated quite well in 1967 and the removal efficiencies for BOD and suspended solids realized were excellent for a primary treatment plant. It is worthy to note that the plant operated on the average slightly above its nominal design capacity.

PROJECT COSTS

NET CAPITAL COST (Estimated)	\$785,370.12
DEDUCT - Portion Financed by CMHC (Estimated)	<u>521,108.36</u>
Long Term Debt to OWRC	<u>\$264,261.76</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1967	\$ <u>31,079.39</u>
Net Operating	\$ 59,857.94
Debt Retirement	9,587.00
Reserve	4,977.49
Interest Charged	<u>14,902.62</u>
TOTAL	\$ <u>89,325.05</u>

RESERVE ACCOUNT

Balance at January 1, 1967	\$ 11,216.51
Deposited by Municipality	4,977.49
Interest Earned	<u>746.94</u>
	\$ 16,940.94
Less Expenditures	<u>(1,318.96)</u>
Balance at December 31, 1967	\$ <u>15,621.98</u>

MONTHLY OPERATING COSTS

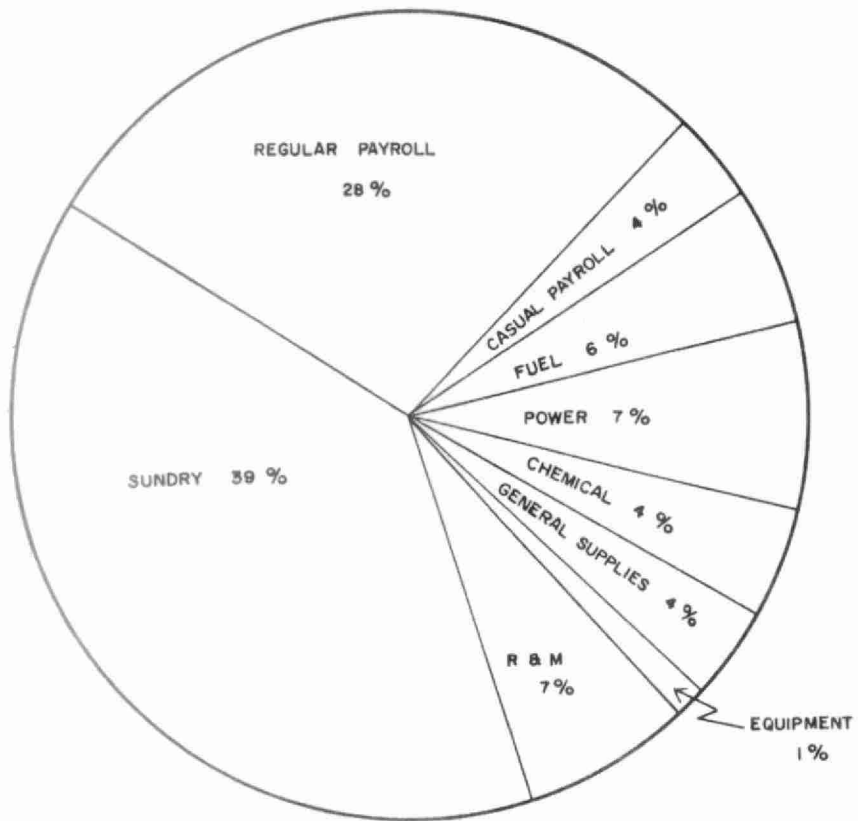
MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	* SUNDRY
JAN	1,703.15	1,090.27	119.92	124.25	305.12	26.16			37.43	
FEB	2,764.13	1,198.64	40.60	406.57	341.74		157.57	104.95	427.80	86.26
MARCH	3,835.86	2,055.00	455.03	287.74	376.38		305.73	98.38	145.23	112.28
APRIL	3,893.37	1,299.57	243.48	541.68	353.81	1029.00	328.88		36.12	60.83
MAY	2,959.99	1,431.67	153.90	219.28	420.28		83.62	173.34	443.19	34.71
JUNE	6,056.66	1,349.29	166.69	389.92	816.64		167.61	98.18	178.17	2890.16
JULY	4,125.61	1,351.32	155.94	191.81	386.86		146.95		128.19	1764.54
AUG	4,022.14	1,393.61	251.06	92.75	348.46		70.04		443.40	1422.82
SEPT	8,753.22	2,037.69	82.22	(1.50)	1665.86	105.32	317.48		529.22	4016.93
OCT	5,911.20	1,366.10	81.02	480.71	(49.62)	1550.85	183.84	242.47	646.62	1409.21
NOV	10,958.65	1,010.25	300.60		464.14		111.76		744.67	8327.23
DEC	4,874.06	1,415.00	104.80	574.00	(963.32)		290.55	7.04	239.46	3206.53
TOTAL	59,857.94	16,998.41	2,155.26	3307.21	4466.35	2711.33	2164.03	724.36	3999.59	23331.40

* SUNDRY INCLUDES SLUDGE HAULING COSTS WHICH WERE \$18,745.96
BRACKETS INDICATE CREDIT

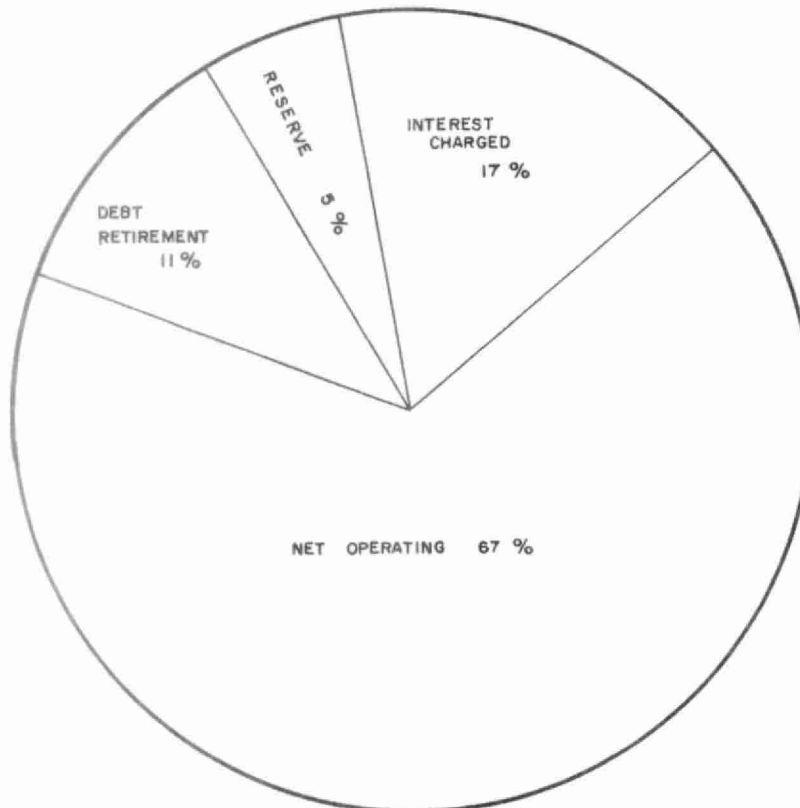
YEARLY OPERATING COSTS

YEAR	M.G. TREATED	TOTAL COST	COST PER MILLION GALLONS	COST PER LB OF BOD REMOVED
1965	1061,286	\$31001.30	\$29.21	3 CENTS
1966	1130,981	31647.82	27.98	2 CENTS
1967	1144,778	59857.94	52.28	6 CENTS

1967 OPERATING COSTS



TOTAL ANNUAL COST



Process Data

FLOWS

The probability of flow graph indicates that during 1967, the average design plant flow was exceeded approximately 62 percent of the time. However, the plant's maximum or wet weather design capacity of 9.0 mgd was not exceeded at any time during the year.

The average daily flow for the year was 3.14 mgd, a very slight increase from the average daily flows of 3.10 mgd in 1966. The average daily flow graph indicates that there was a substantial flow received at the plant during late spring. This high flow can be attributed to the considerable runoff from a heavy snow accumulation.

AVERAGE DAILY FLOW (MGD)

PROBABILITY OF FLOWS

DESIGN FLOW

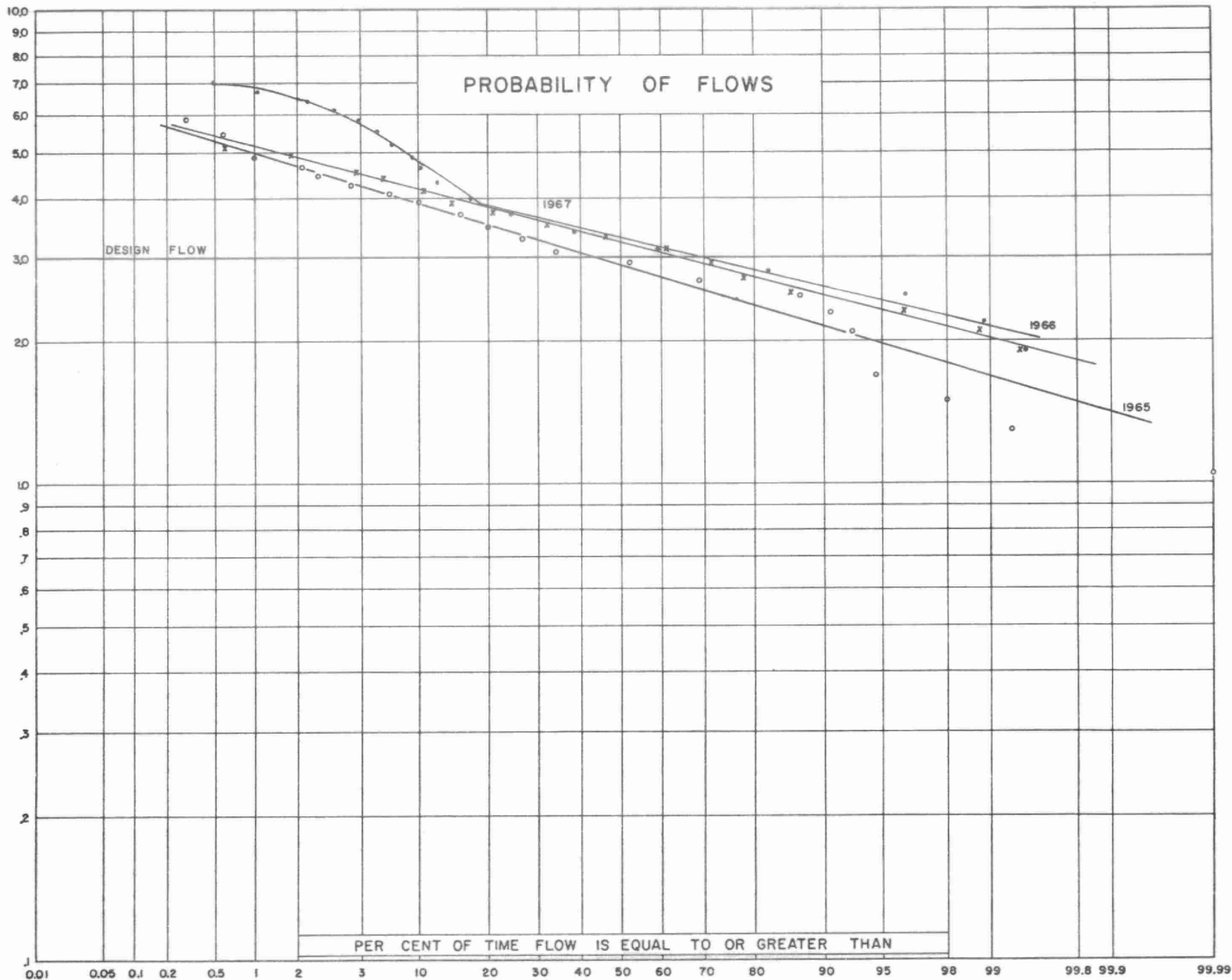
1967

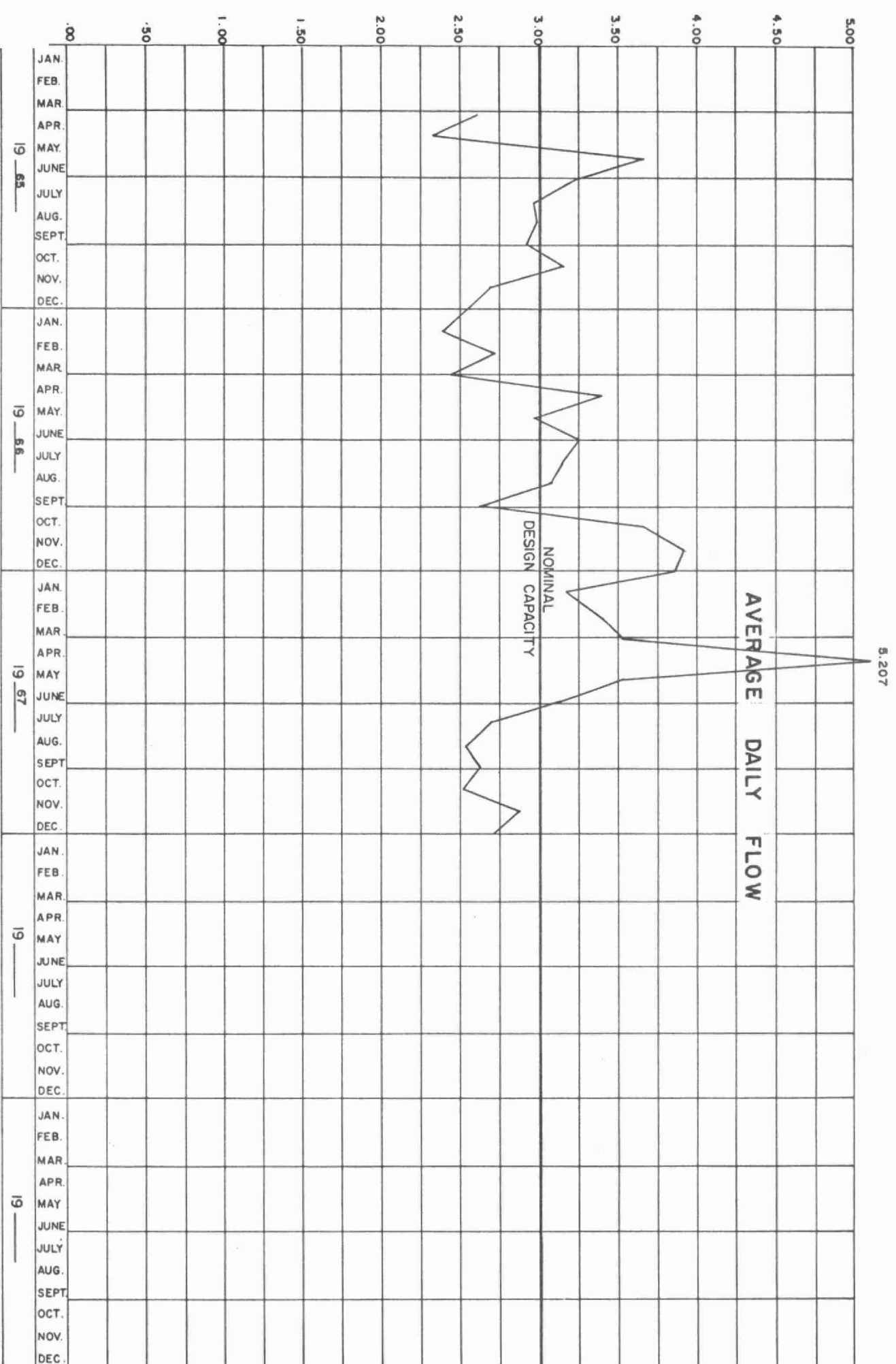
1966

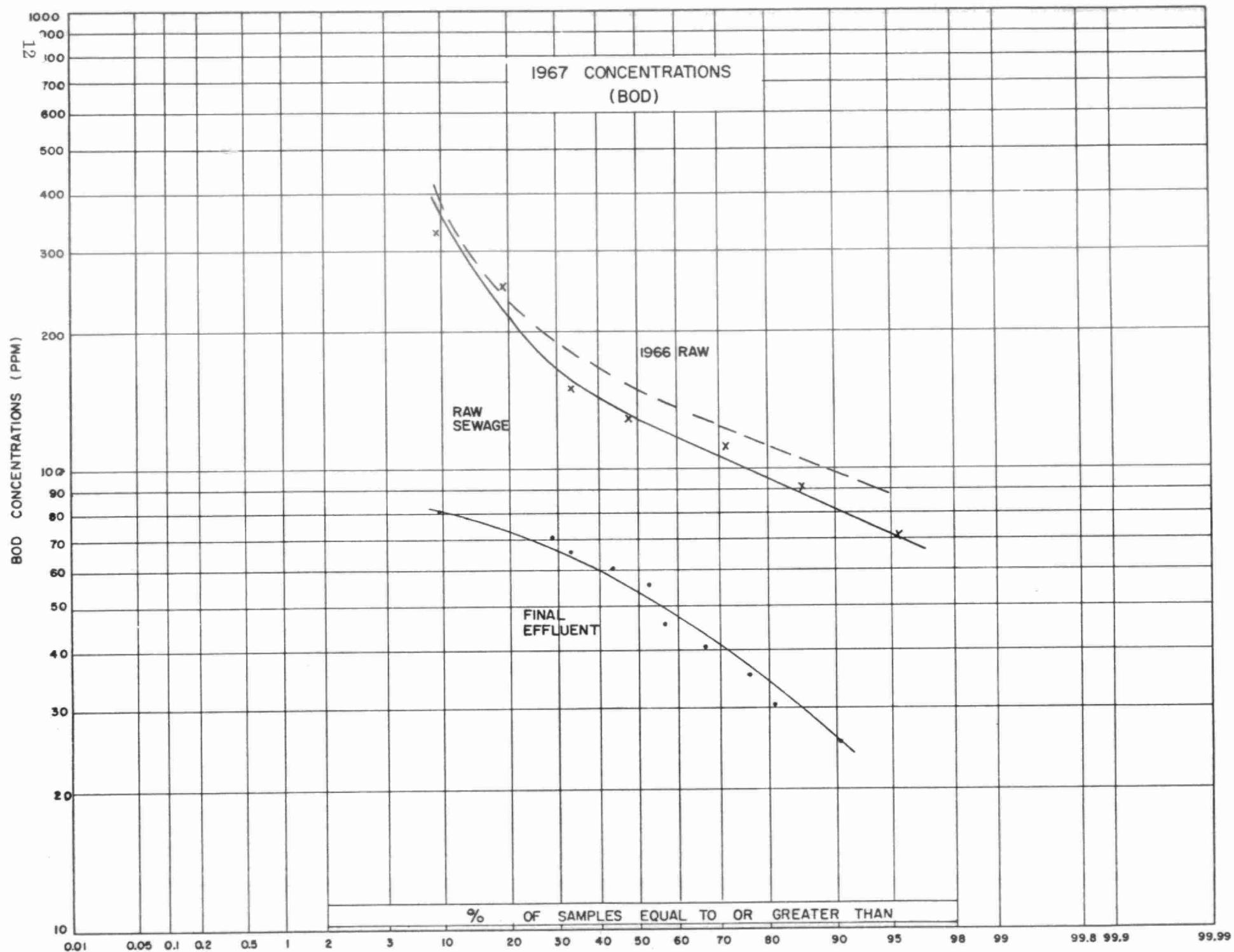
1965

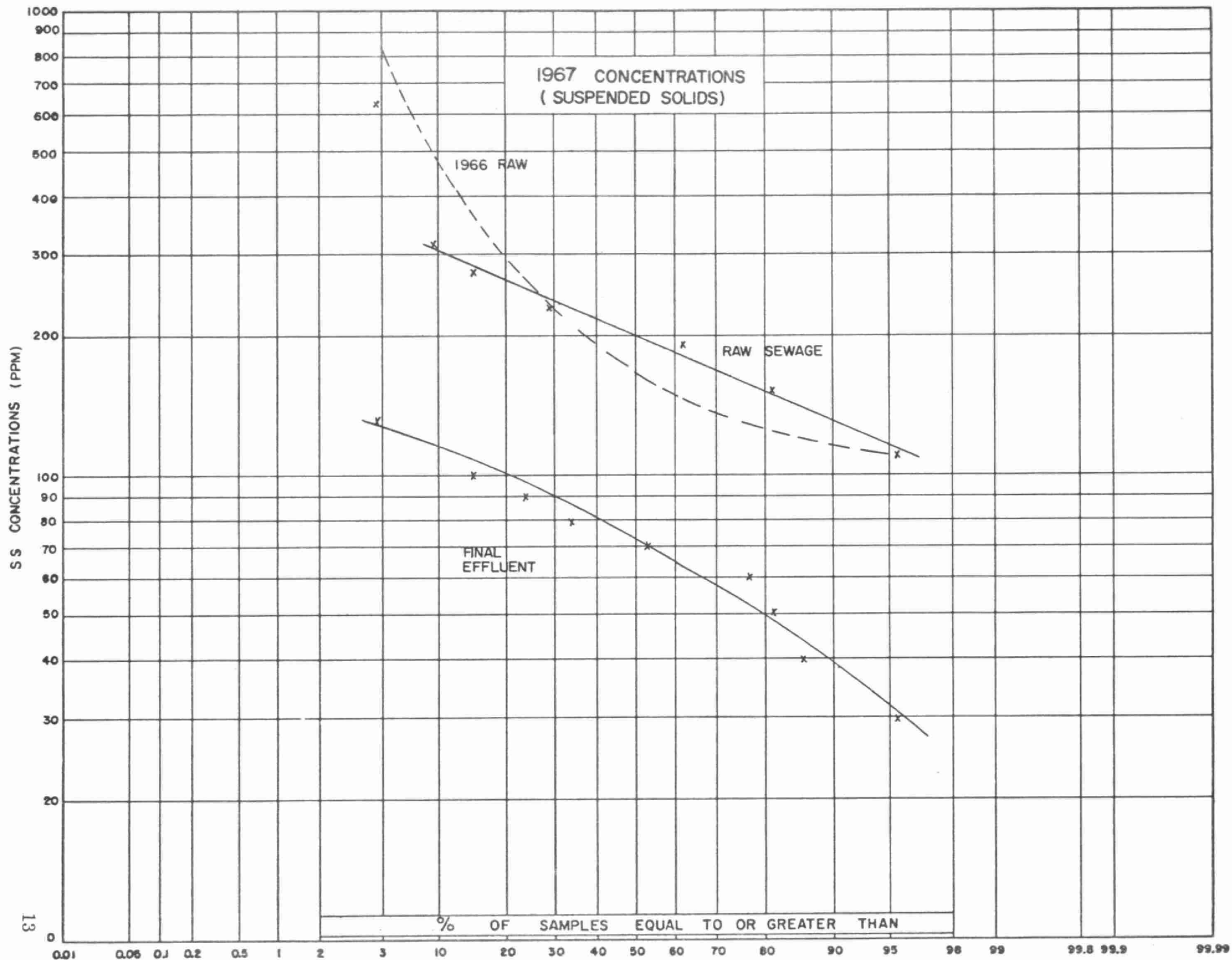
PER CENT OF TIME FLOW IS EQUAL TO OR GREATER THAN

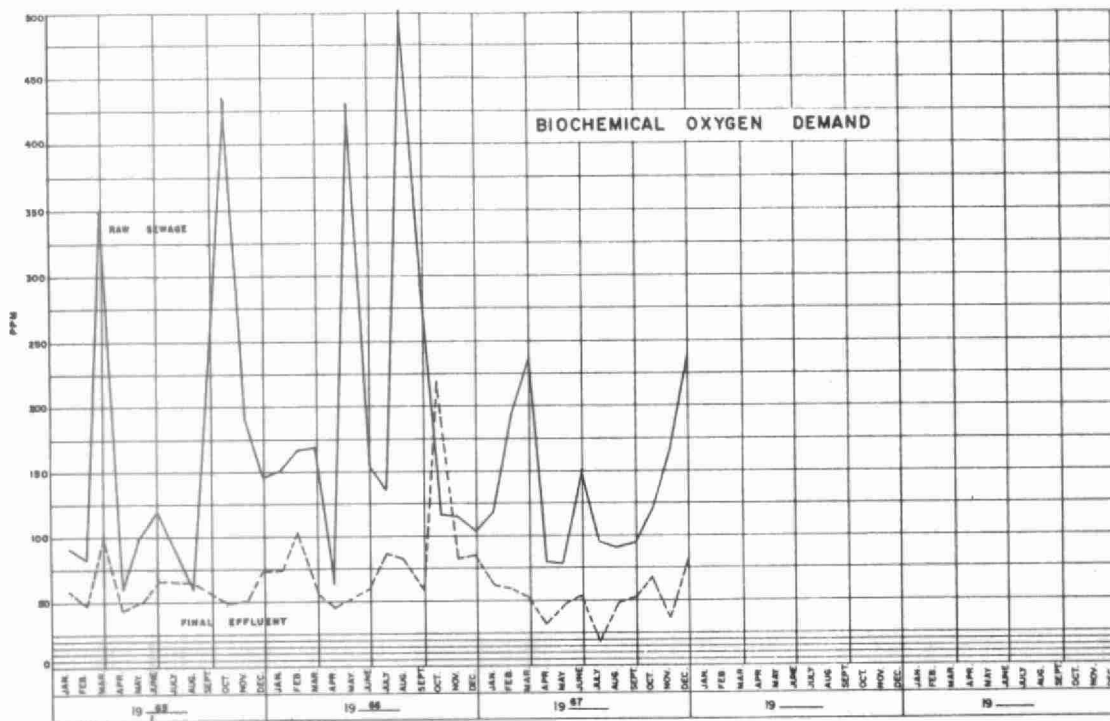
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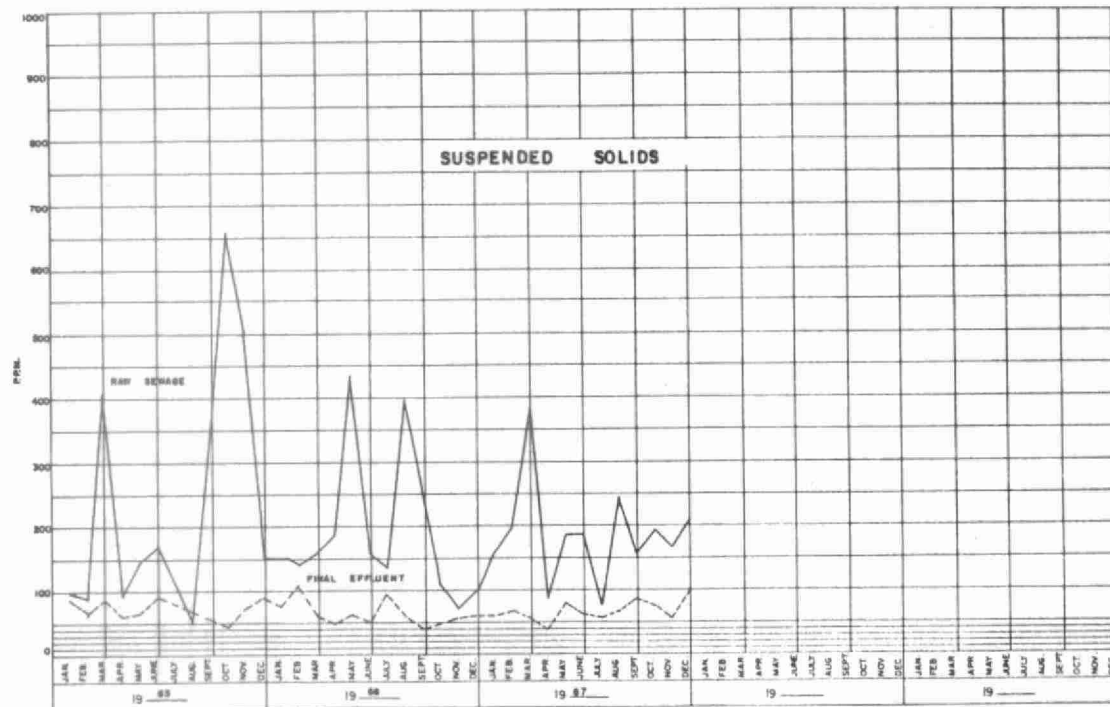








MONTHLY VARIATIONS



GRIT, B.O.D AND S.S. REMOVAL

MONTH	B. O. D.				S. S.				GRIT REMOVAL CU. FT.
	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	
JAN.	117	62	47.0	54.30	154	56	63.6	48.02	155.0
FEB.	193	57	70.5	64.46	134	66	51.1	37.70	140.0
MAR.	235	51	78.3	100.21	382	55	85.6	178.09	155.0
APR.	78	30	61.5	37.50	83	37	55.4	35.93	274.2
MAY	76	45	40.8	16.94	182	75	58.8	58.46	282.2
JUNE	147	52	64.6	44.72	184	62	66.3	57.43	180.2
JULY	94	16	83.0	32.33	72	51	29.2	8.70	262.3
AUG.	89	45	49.4	17.32	243	62	74.5	78.35	211.4
SEPT.	94	51	45.7	16.92	156	81	48.1	29.51	237.0
OCT.	119	66	44.5	20.63	190	75	60.4	44.76	349.2
NOV.	170	35	79.4	58.46	168	51	69.6	50.67	257.6
DEC.	240	80	66.7	66.95	208	94	54.8	47.70	322.8
TOTAL	-	-	-	530.74	-	-	-	675.32	2826.9
AVG.	138	49	64.5	44.23	180	63	65.0	56.28	235.6

COMMENTS

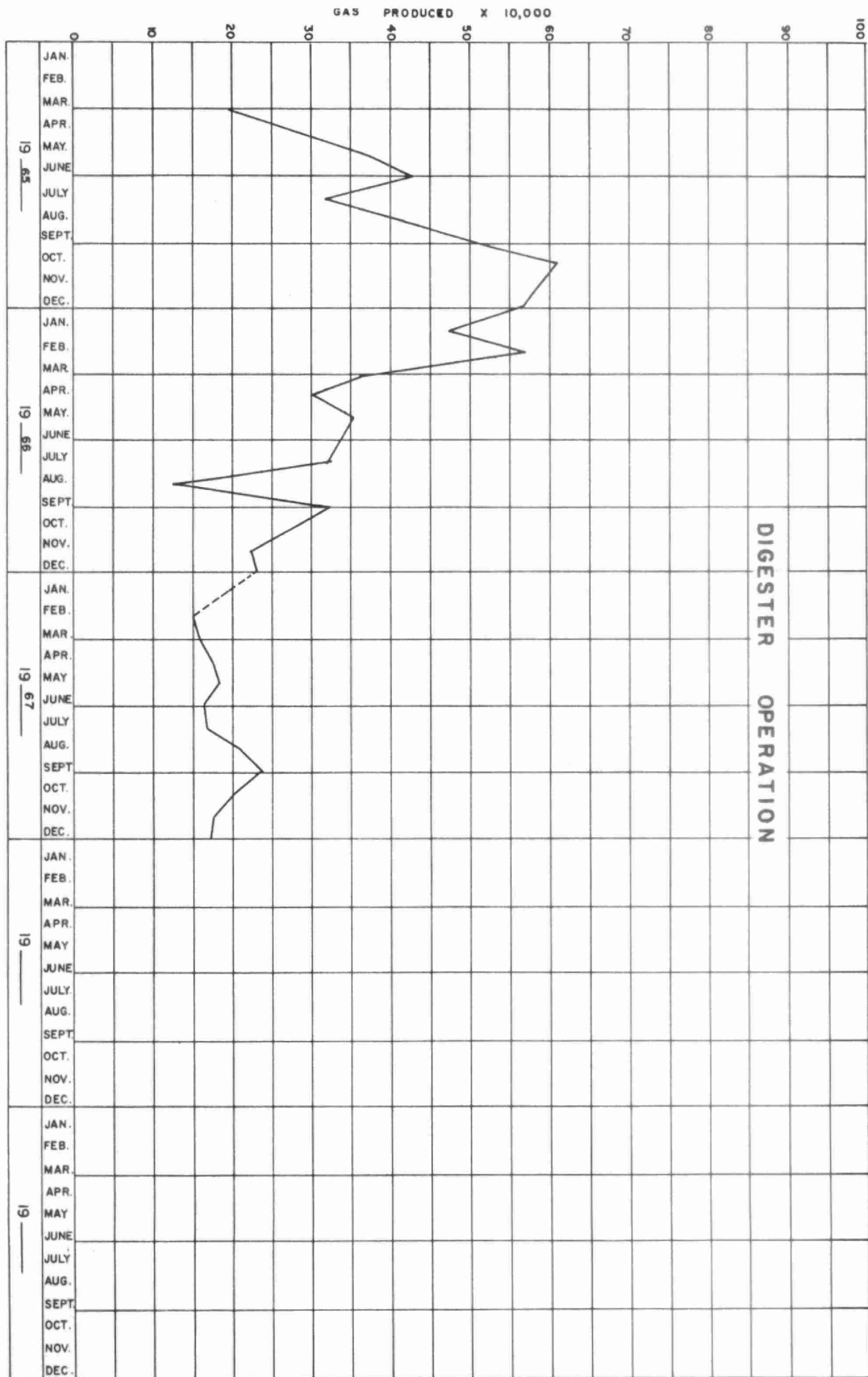
The average BOD concentrations of the raw sewage and final effluent were 138 ppm and 49 ppm respectively. These concentrations represent a BOD reduction of 64.5%-considerably in excess of the efficiency expected for this type of plant.

The average suspended solids concentrations of the raw sewage and final effluent were 180 ppm and 64 ppm respectively, which represents a reduction of suspended solids of 65.0%. This reduction is satisfactory with respect to the expectations of 60-65% for suspended solids removal.

During 1967 a total of 530.74 tons of BOD and 675.32 tons of suspended solids were removed from the raw sewage.

A total of 2,826.9 cubic feet of grit were removed. This total represents 2.5 cubic feet per million gallons of sewage treated.

DIGESTER OPERATION



DIGESTER OPERATION

MONTH	SLUDGE TO DIGESTERS			SLUDGE FROM DIGESTERS			GAS PRODUCED 1000'S Cu. Ft.
	GALLONS	% SOLIDS	% VOL. MAT	GALLONS	% SOLIDS	% VOL. MAT	
JAN.	386,925	2.34	83.76	199,785	5.40	50.00	107.973
FEB.	441,000	1.21	81.00	186,812	2.94	68.37	149.205
MAR.	407,400	2.91	-	210,162	2.87	-	155.460
APR.	504,000	2.29	-	142,434	5.17	-	173.321
MAY	520,800	2.00	66.50	166,053	6.32	40.98	183.271
JUNE	504,000	5.18	75.38	169,946	-	-	163.246
JULY	520,800	2.90	36.20	150,486	8.18	53.91	168.570
AUG.	520,800	3.11	-	164,505	2.62	-	210.945
SEPT.	504,000	3.99	77.40	149,239	3.95	54.38	237.216
OCT.	520,800	2.56	80.07	158,269	6.73	63.10	199.331
NOV.	504,000	2.68	-	158,269	-	-	176.044
DEC.	520,800	1.82	-	146,595	3.92	-	170.868
TOTAL	5855,325	-	-	2002,555	-	-	2095.450
AVG.	487,943	2.75	71.49	166,879	4.81	55.12	174.621

COMMENTS

A total of 5,855,325 gallons of raw sludge was pumped to the digester during 1967. The laboratory results indicate an average volatile solids reduction of 52%. Generally, a volatile solids reduction of 50% is considered adequate digestion. Sludge haulage during the year amounted to 2,002,555 gallons. A total of 2,095,450 cubic feet of gas was produced in 1967.

An indicator of digester performance is the amount of gas produced per pound of volatile matter converted to gas. Generally, 7.0 to 12.0 cubic feet of gas is produced per pound of volatile matter converted in a good digestion process. An average of approximately 3.5 cubic feet of gas was produced per pound of volatile matter converted during the year by the digester. This gas production represents a low digester efficiency.

The recommendation made in 1966 to install a mixing system should be implemented. This installation would increase the efficiency of the digester considerably.

CHLORINATION

MONTH	PLANT FLOW (MG)	POUNDS CHLORINE	DOSAGE RATE (PPM)
JANUARY	98.008	-	-
FEBRUARY	94.791	-	-
MARCH	108.925	-	-
APRIL	156.236	-	-
MAY	109.278	* 3200	5.67
JUNE	94.156	4590	4.88
JULY	82.898	4180	5.04
AUGUST	73.658	5800	7.87
SEPTEMBER	78.685	4610	5.85
OCTOBER	77.838	5890	7.56
NOVEMBER	86.614	-	-
DECEMBER	83.691	-	-
TOTAL	1,144.778	28270	-
AVERAGE	95.398	5712	6.15

* Chlorination for 16 days

COMMENTS

From May 15 to October 31 chlorine was added to disinfect the final effluent. During this period, a total of 28,270 pounds of chlorine was used. This total represents a dosage rate of 6.15 ppm which was sufficient to maintain a minimum residual of 0.5 ppm in the final effluent.



CONCLUSIONS

The plant operated quite well during 1967 and the efficiencies of removal achieved were quite good for a primary treatment plant.

RECOMMENDATIONS

A digester mixing system should be installed. This system would increase the efficiency of the digestion process considerably.



